

Date: Fri, 14 Oct 94 04:30:37 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: List
Subject: Ham-Homebrew Digest V94 #303
To: Ham-Homebrew

Ham-Homebrew Digest Fri, 14 Oct 94 Volume 94 : Issue 303

Today's Topics:

 Address to MOUSER
 Amateur Radio Equipment
 balun construction (2 msgs)
 Biasing tetrode tube - affects gain?
 coffee-can notch filters?
 help with 12v supply regulation
 How to design VCO? (2 msgs)
 Identifying toroids (2 msgs)
 INDUCTANCE MEASURING
 Kenwood TS680/140 Computer Interface
 Re lemon QSO]
 RF Switches Anyone? (2 msgs)
 Search for Homebrew SW Receiver Info
 Suggestions on Lemon Powered QRP rig (2 msgs)
 Where can I mailorder parts on the Internet?

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Thu, 13 Oct 1994 15:35:26 EDT
From: aw@kthbib.lib.kth.se
Subject: Address to MOUSER

I plan to build the NorCal 40 QRP-trcvr, and I understand that
most parts are to be find at MOUSER. Can anybody supply me with
the post address to MOUSER, and e-mail as well if any.

73 Anders SMOHPL

Date: 12 Oct 1994 16:41:52 GMT
From: u3611506@abac.au.ac.th (Jade V. Thaveekij)
Subject: Amateur Radio Equipment

I'm looking for a 1kw 144MHz linear amplifier. Anyone has an information on this, please send to me through email or direct to my address below.

--
-= Jade V. Thaveekij HS1ZEB N3JTV -= -= EMail: u3611506@abac.au.ac.th -=

Date: 13 Oct 1994 14:40:02 GMT
From: jms@col.hp.com (Mike Stansberry)
Subject: balun construction

I want to construct a balun, for a receiver, 50 ohms unbalanced to 200 ohms balanced, covering the frequency range of .5 to 33 MHz. All the toroid cores I've found (Amidon) don't seem to cover that wide of a frequency range. Does anyone have any ideas how to go about such a task? Should I just select the closest toroid core and accept the losses when I use it out of it's frequency range?

Any suggestion and help are appreciated.

Mike, K0TER

Date: 13 Oct 1994 20:05:30 GMT
From: royle@tekwp4.cse.tek.com (Roy W Lewallen)
Subject: balun construction

jms@col.hp.com (Mike Stansberry):

>I want to construct a balun, for a receiver, 50 ohms unbalanced
>to 200 ohms balanced, covering the frequency range of .5 to 33 MHz.
>All the toroid cores I've found (Amidon) don't seem to cover that
>wide of a frequency range. Does anyone have any ideas how to go
>about such a task? Should I just select the closest toroid core
>and accept the losses when I use it out of it's frequency range?

The "frequency ranges" usually given for ferrites are ranges appropriate for using them as inductors. At the given ranges, inductor Q will be

reasonable. Above the stated range, the impedance remains high but becomes resistive. Typical "low-frequency" ferrites exhibit a relatively constant impedance over several decades of frequency above the "recommended" range. This is not a problem, and in fact has advantages, for untuned transformers. In a properly designed transformer, the winding impedance is high and it's not important whether the impedance is resistive or reactive. Therefore, "low-frequency" ferrites are ideal for use as baluns and other untuned transformers. 70-series is best for the HF range, 43 best at 6 meters, and type 61 for higher frequencies. The exception is when very high power is involved. If the power level is 1 kW and the core loss is 5%, you have an insignificant attenuation of your signal but the core has to dissipate 50 watts of power. In this case, it would be better to use type 43 or even 61 at HF, but it'll be harder to achieve enough impedance, especially with type 61. (Type numbers are Fair-Rite Corp. designations. Other companies have equivalent types with different designations.)

73,
Roy Lewallen, W7EL
roy.lewallen@tek.com

Date: Wed, 12 Oct 1994 06:24:26 GMT
From: wrt@eskimo.com (Bill Turner)
Subject: Biasing tetrode tube - affects gain?

In article <dgfCx3Ft.Gs2@netcom.com>, David Feldman <dgf@netcom.com> wrote:

>I'm slowly progressing on a passive grid driven 4-1000 amp. I can either
>bias it as a regular tetrode per eimac specs (some screen voltage and
>some grid voltage as appropriate), or bias it as if it were going to
>be run like a grounded grid triode (ground the screen, DC ground the
>control grid, and AC ground the cathode, with a few volts of zener
>bias in the cathode DC path as would be done for grounded grid).

>
>Anyway, it seems like it would be much simpler to use the grounded-
>grid style biasing (remember, the tube would still be grid driven, so
>it is not a regular grounded grid circuit).

>
>Would these two approaches yield different gain in the amplifier, all
>other things (AC circuit parameters) being equal? I want to take the
>passive grid driven approach to (1) avoid the tuned input needed for
>a grounded grid amp, and (2) reduce drive requirements to about 50W
>for full output.

>
>Thanks for any insights!

>
>73 Dave WB0GAZ dgf@netcom.com
>

Well, I see one major problem. Any tetrode is not going to conduct much if at all until there is the proper voltage difference (usually several hundred volts) between the screen and the cathode. If the screen is grounded, then the cathode must be several hundred volts negative with respect to ground. This is what happens when you connect a tetrode in "grounded grid" (both grids grounded) and drive the cathode. If you connect the screen to ground, control grid to DC ground, put a few volts bias on the cathode and then try to drive the control grid, you're probably going to ruin the control grid. You just won't be able to drive it hard enough without the screen-cathode differential voltage. All that will happen is that control grid current will flow and that's it - little or no plate current because of the missing screen. Make sense?

73, W7LZP

Date: Wed, 12 Oct 1994 05:58:21 GMT
From: wrt@eskimo.com (Bill Turner)
Subject: coffee-can notch filters?

In article <1994Oct5.120952.5557@qatrix.lonestar.org>, ken brookner <kenb@qatrix.lonestar.org> wrote:
>some time ago i ran across an article on the construction of coffee-can
>notch filters. i can't remember where, unfortunately. i've got an
>application where something like this would be quite helpful now and am
>trying to locate the information.
>
>if anyone can point me to a reference, or provide me with some design
and
>construction details, i'd be very appreciative.
>
>thanks! please post here or reply to kenb@metronet.com.
>
>ken brookner, n5lpi
>kenb@metronet.com
>kenb@qatrix.lonestar.org
>

The coffee-can type filters work pretty well for receiving, but they're too lossy to use for transmitting. A friend of mine brought a six meter version into work the other day and we hooked it up to a \$30k HP impedance analyzer just to see what it was REALLY doing. It had a nice sharp peak at 50 MHz just as advertised, but you should have seen the look on his face when he realized it had a 3db insertion loss. This means that half the power through it was lost as heat. Good thing he wasn't running a KW - would have kept the room nice and warm!

The problem of course is that there is a very large amount of circulating tank current in the device. Had it been silver-plated, it probably would have been ok. If you still want to try one for six meters, email me and I'll get you the dimensions. For other bands you could scale it up or down, but at higher freqs, the loss will be even higher due to increased skin effect.

73, W7LZP

Date: Wed, 12 Oct 1994 23:56:58 GMT
From: chrisw@bnr.ca (Chris Witkowski)
Subject: help with 12v supply regulation

In article <37h9fu\$3kpl@yuma.ACNS.ColoState.EDU>,
Robert Taylor <greendot@lamar.ColoState.EDU> wrote:

> Hello I am building a 12v regulated power supply but i need help
> regulating it! I don't know wich transistor's to use or exactly
> how they should go. The transformer is a 12 amp non center tap.
> could someone please mail about what the suitable transistors would
> be and how to controll them!
> Thanks a bunch
> Robert
>

The simple and obvious answer is: just use a 7812. This is a 3-terminal regulator chip. But, given the voltage of your transformer further analysis is needed. A 7812 requires about 2 volts or more across it to work properly. There are low dropout regulators that require .6 to 1 volt across them (unfortunately I don't know what's available). The voltage drop across the rectifiers can be reduced by using Schottky diodes instead of silicon diodes.

Measure the open circuit voltage of the transformer secondary. Put rated

load on the secondary (use power resistors and/or lamps) and measure the voltage. Post the results as well as the maximum current you want to draw. I or someone else will then be able to tell if it is possible for you to get what you want with the transformer you have and how best to get it.

While it is possible to design and build a discrete voltage regulator circuit it is so much easier to use a chip.

--

Chris Witkowski | Bitnet: chrisw@bnr.ca | Phone: (613) 832-0135
BNR Ltd. | UUCP: uunet!bnrgate!bcars288!chrisw | FAX: (613) 763-2626

Standard disclaimer applies.

Date: 13 Oct 1994 17:21:53 GMT
From: Cecil_A_Moore@ccm.ch.intel.com
Subject: How to design VCO?

In article <37iong\$5uc@news.csie.nctu.edu.tw>,
m330_fredkuo <fredkuo@PROBLEM_WITH_INEWS_DOMAIN_FILE> wrote:

>

> I have a question on VCO design : the resistor and
> capacitor of voltage control input, normally for filtering
> out the noise ,seems to change the PLL characteristics.

Hi Fred, your 5 or 50 uF cap is probably an electrolytic and not good at decoupling RF. Parallel that cap with a 0.1 uF ceramic. 4.7k seems low for the resistor, I usually use 100k or an RF choke.

--

73, Cecil, KG7BK, 00TC (All my own personal fuzzy logic, not Intel's)

Date: Thu, 13 Oct 1994 16:27:00 GMT
From: tomb@lsid.hp.com (Tom Bruhns)
Subject: How to design VCO?

m330_fredkuo (fredkuo@PROBLEM_WITH_INEWS_DOMAIN_FILE) wrote:

: I have a question on VCO design : the resistor and
: capacitor of voltage control input, normally for filtering
: out the noise ,seems to change the PLL characteristics.
: for example, a vc input as follows

: R = 4.7k

: VC I/p>---|---|\\|\\|\\|\\|-----> to varactors

```

:           |
:           ---
:           --- C = 50 uf
:           |
:           |
:           |
:           --- GND

```

: The big capacitor 5uf is directly parallel connects with the
: loop filter of PLL. Should I take this capacitor as a part of the
: PLL loop filter? And, how can I design a VCO that will not affect
: the PLL performance ?

Yes, the cap will be part of the filter. There really shouldn't be a need for it. About the only filtering you need at the varactor control input would be to take out RF (keep RF from getting back into the active elements feeding the control input), and a 5uF or 50uF (aluminum electrolytic or tantalum) isn't going to be a particularly good RF filter anyway.

As for that last question, it's a little like asking how to design a car with wheels that won't affect the performance. The VCO is an integral part of the loop, and its transfer function must be accounted for in evaluating the whole loop. Even if it's response is very fast, you must at least take into account its "gain": so many kHz/volt. And you better insure its response is fast enough that where it starts to roll off is above the unity-gain frequency around the loop if you want to even think about ignoring its frequency response characteristics.

Date: 13 Oct 1994 06:49:25 -0400
From: mike@io.org (Mike Stramba)
Subject: Identifying toroids

I have a grey toroid marked 34 am 55206 - a2 +2, outside dia .75, inside dia 9/16".

From the ARRL handbook, it looks like it might be a T-80-3 ???

Are the color codes standard for toroids?

Is there a color code for ferrite toroid mix types?

Mike

--

=====

Mike Stramba	Email: mike@io.org
Toronto, Canada	Internex Online - Toronto, Canada (416) 363-3783

=====

Date: 13 Oct 1994 18:12:48 GMT
From: royle@tek4.cse.tek.com (Roy W Lewallen)
Subject: Identifying toroids

mike@io.org (Mike Stramba):

>I have a grey toroid marked 34 am 55206 - a2 +2, outside dia .75, inside
>dia 9/16".

>From the ARRL handbook, it looks like it might be a T-80-3 ???

>Are the color codes standard for toroids?

>Is there a color code for ferrite toroid mix types?

To my knowledge, there's no standard color coding for ferrites. Most are unpainted, so are the gray color of the ferrite itself. Others are painted. I've seen gray-painted cores which are ferrite and others which are low-frequency powdered iron. I'm assuming yours is painted, so I don't know of any way to determine what it is except by putting a small number of turns on the core and measuring its impedance at a number of frequencies. If you have one you can sacrifice, you can break it. (Wear safety glasses.) Ferrite breaks like glass, while powdered iron doesn't. If it's ferrite, you can get a general idea of the type by measuring the DC resistivity of the core. (High-freq. ferrites have high resistivity, low-freq. ferrites have relatively low resistivity.) All powdered-iron cores I'm familiar with look like insulators at DC.

The powdered-iron cores made by Micrometals (and sold by Amidon and others) do have a standard color code, but other cores may resemble them.

73,
Roy Lewallen, W7EL
roy.lewallen@tek.com

Date: Wed, 12 Oct 1994 06:09:27 GMT
From: wrt@eskimo.com (Bill Turner)
Subject: INDUCTANCE MEASURING

In article <pelt-0710941337220001@box185.ams.vt.edu>,
Ranson J. Pelt <pelt@vt.edu> wrote:
>QST

>
>Can anyone give me some advice on a good piece of equipment for
measuring
>inductances. I have an LCR meter (LCR 195) which I purchased from
Alpha
>Elec. several years ago. This meter works great for measuring
capacitance
>but just doesn't get it for measuring small inductances (uh range).
>
>Tnx for the help.
>
>de nz4i Randy
>
>--
>Ranson Pelt
>pelt@vt.edu
>QST de nz4i

For inductances in the range of .1 to 300 uHy, an old Tektronix model
130 is hard to beat, but also hard to find. They have been out of
production for years, but they show up from time to time. I finally
found one last year at a hamfest for \$40 in perfect working order.
Would've paid two or three times that much if I had to. Great 'ol
timer.

73, W7LZP

Date: Thu, 13 Oct 1994 18:18:21 GMT
From: duncanfj@eplrx7.es.duPont.com (Jeff Duncan)
Subject: Kenwood TS680/140 Computer Interface

hbrown@nadir.resd (Harry H. Brown) writes:

Call QSO Software

Call QSO Software at 1800 GUD DX 73 They have both an interface clone and
the software for IBM or Macintosh. 1800 483-3973.

>I've got a Kenwood TS680 transceiver that I would like to connect to a PC. My
manual indicates that there is one but since this transceiver is no longer made,
I'm looking for a used unit or a HB one. I'm also looking for MS DOS software for

use with it. Does anyone have circuit info or know where I can find it (including control software)?

>73, Harry, W3IIT
>hbrown@resd.vf.ge.com

Date: Tue, 11 Oct 94 22:31:33 EDT
From: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org (Mike Czuhajewski)
Subject: Re lemon QSO]

"Quite seriously", I would not want to discourage experimentation and learning and inquisitiveness. Go ahead with the lemon powered QSOs! (But be prepared for flames from the Fruits Rights crowd; it's inevitable; citrus abuse is a horribly under-reported crime, but public awareness is growing.) 73 de WA8MCQ (who doesn't power rigs with cute power sources, but does build them into very tiny, cute little enclosures and has a tremendous amount of fun doing it, and pays no attention to those who say it's foolishness because they're not practical)

Date: Thu, 13 Oct 1994 14:48:36 GMT
From: jorden@bianca.amd.com (Pat Jorden)
Subject: RF Switches Anyone?

In article <CxIw7r.48u@srgenprp.sr.hp.com>,
Alan Bloom <alanb@hpnmarb.sr.hp.com> wrote:
>Magoon Steve (magoo871@raven.csr.vt.edu) wrote:
>: Help! Anyone know where I can get an RF switch suitable for PC mount and
>: controllable by TTL? Power need is low, max +20dbm, but it needs to have
>: *good* bandwidth(>500 MHz) and off isolation. Mini-circuit switches
>: aren't acceptable because they have bleed thru. Sure appreciate any
>: advice. What do the hi-bandwidth o-scope manufacturers use?
>
>With some care, I think you can get reed relays to work up to 500 MHz.
>
>AL N1AL
>

greetings,

I regularly use Teledyne brand T0-5 sized relays, DPDT. These are small PC mount relays, that are characterized to 1GHz. Certain varieties are TTL interface compatible. They are fairly easy to use, and cost about \$20 each.

Body size is T0-5 (dimensions approx. .370" x .275" for case).

I use these relays for applications other than what would be termed "RF", but they are pretty good relays in my humble opinion. Manufacturer claims they are excellent for RF applications.

-pat jorden, (these are my opinions, and not necessarily those of my employer...etc. etc.)

pat.jorden@amd.com

Date: 13 Oct 1994 17:20:24 GMT
From: royle@tek4.cse.tek.com (Roy W Lewallen)
Subject: RF Switches Anyone?

In article <37cr23\$56s@owl.csr.v.uidaho.edu> magoo871@raven.csr.v.uidaho.edu (Magoon Steve) writes:

>Help! Anyone know where I can get an RF switch suitable for PC mount and
>controllable by TTL? Power need is low, max +20dbm, but it needs to have
>*good* bandwidth(>500 MHz) and off isolation. Mini-circuit switches
>aren't acceptable because they have bleed thru. Sure appreciate any
>advice. What do the hi-bandwidth o-scope manufacturers use?

>

>--

> Thanks, Steve Email: magoo871@uidaho.edu
> U of Idaho, Moscow, Idaho.

You can get greatly improved off-isolation performance and no degradation of on-resistance by using two diodes. Follow the series diode with a shunt diode. Turn one on when the other is off, and vice-versa.

73,
Roy Lewallen, W7EL
roy.lewallen@tek.com

Date: Thu, 13 Oct 1994 15:19:54 +0000
From: chasr@parc.demon.co.uk (charles rodgers)
Subject: Search for Homebrew SW Receiver Info

In article <w4qo.781722935@atl1>
w4qo@peach.america.net "James C. Stafford" writes:

> asmith@utkvtx.utk.edu (A.L. Smith) writes:
>
> >Does anyone know of FTP or other source of plans for building a simple
> >SW Receiver?
> >Thanks,
> >asmith@utkvtx.utk.edu
> TenTec has a regenerative sw kit for about 17 bux. I have it but have
> not built it yet. It includes a nice little front panel. Let me know if
> you do not know what TenTec is.
>
Hi All,
Believe it or not this is my first contact on newsnet.
Rather like a first contact on air :-))
Anyway here goes.
I know what Tentec is - I have a Corsair II, but I'm very interested in the
sw receiver kit you mentioned. Would appreciate you posting the info so that
I can place an order from the UK.
--
charles rodgers g7oyn
chasr@parc.demon.co.uk

Date: 13 Oct 1994 17:42:14 -0400
From: w4qo@peach.america.net (James C. Stafford)
Subject: Suggestions on Lemon Powered QRP rig

Of course, I/we recognize that it is not the lemon that powers the
radio. The whole idea of the project is to use different electrolytes
and electrode materials to generate electricity. Also, the difference
between a science fair project and pure research is that we try to have
fun with science and also to make an eye catching display. That is why
my ham radio student wants to conduct a radio transmission and reception
using some "odd" batteries.

What I am looking for is a very low powered receiver circuit to match up
with the transmitter from the original QST article that I mentioned. Any
help appreciated.

73, Jim, W4QO

Date: 12 Oct 1994 08:52:35 GMT
From: moritz@ipers1.e-technik.uni-stuttgart.de ()
Subject: Suggestions on Lemon Powered QRP rig

>As long as an understandable electrochemical explanation is given for *why*
>the lemons and electrodes work, I don't see anything wrong with a demo of
>this type.

You are missing my point here. If someone put a piece of zinc and a piece of copper into a glass of water and showed the effect of adding some salt it would be much more instructive.

It is the phrase "lemmon power" itself that is the gimmik.

73, Moritz DL5UH

Date: Thu, 13 Oct 1994 15:36:48 +0000
From: chasr@parc.demon.co.uk (charles rodgers)
Subject: Where can I mailorder parts on the Internet?

In article <374mtj\$kcpc@nova.np.ac.sg> s2202629@np.ac.sg "Teh Aik Wen" writes:

> I'd like to know if there's anywhere on the net I can mailorder for
> stuffs in the Radio Shack or Maplin catalog or any other major electronics
> companies (Are they called that?)
>
> I'd like to pickup a couple of stuffs, and would want to find out how
> much it'd cost me and the things like that first, and if nothing else,
> it'd save on time & postage sending it _there_ in the first place.
>

Teh, If you have the Maplin catalogue then you will find that you can mail order by modem with amex or visa. Maplin deal with overseas mail orders so they should accept your order by Cashtel (Computer Aided SHopping by TELEphone). If you need more info then let me know. Not exactly Internet but if you don't mind a long distance phone call then it may be a way of getting what you want.

--
charles rodgers
chasr@parc.demon.co.uk

End of Ham-Homebrew Digest V94 #303
